

## Greenhouse Gas Reporting and Disclosure: Key Elements of a Prospective U.S. Program

A mandatory greenhouse gas (GHG) reporting and disclosure program is an essential first step in any effort to reduce U.S. GHG emissions. The program should be comprehensive, but should be implemented in phases to allow for the development of widely accepted and sound reporting protocols. Ultimately, the program should:

- Cover at least 75 percent of the human-induced U.S. GHG emissions;
- Accurately track at least six greenhouse gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and others as appropriate;
- Require reporting by the largest GHG emitters of emissions under their control, including direct emissions from their facilities and vehicle fleets, and emissions generated elsewhere in association with their purchase of electricity, heat, and steam;
- Require reporting of emissions associated with use of certain GHG-intensive consumer products, such as vehicles and major appliances, by their manufacturers;
- Allow and encourage voluntary reporting by smaller GHG emitters and of projects to curb or sequester emissions, both in the United States and abroad;
- Ensure that voluntary GHG reductions that are tracked in accordance with the reporting program (including verifiable previous reductions) are recognized under any future U.S. domestic program to limit GHG emissions;
- Disclose the collected information to the public via the Internet in a timely fashion; and
- Minimize the cost and general burden associated with reporting and maximize transparency and accuracy through several measures, including the establishment of reporting protocols, emissions factors, and electronic reporting, and integration with other GHG and environmental reporting programs.

Human activities are increasing atmospheric greenhouse gas (GHG) concentrations. Evidence is growing that rising global temperatures, higher sea levels, changing precipitation patterns, and other adverse impacts will result. Since the United States is the world's largest GHG emitter, no strategy to address global climate change can succeed without substantial and permanent reductions in U.S. emissions. Efforts to date have failed


to curb the overall growth in U.S. emissions, which have increased by 14.1 percent since 1990.<sup>1</sup>

A number of policy options aimed at securing emissions reductions are discussed in another policy brief published by the Pew Center on Global Climate Change, entitled *The U.S. Domestic Response to Climate Change: Key Elements of a Prospective Program*. That policy brief outlines elements of

a domestic climate change program that would: (1) improve the tracking and reporting of GHG emissions, (2) promote new technologies and practices, and (3) secure long-term emissions reductions through a flexible mandatory program, such as a mandated cap on GHG emissions with market-based trading of emissions credits.

This brief provides additional guidance regarding the first step in any domestic program: a reliable and credible system for tracking and reporting GHG emissions. Similar to the federal Toxics Release Inventory (TRI) program, a mandatory GHG reporting program would apply to all major sources of GHG emissions and require disclosure of their reports in a publicly accessible Internet-based database. Such a reporting program would: (1) provide a solid foundation for a U.S. program to reduce GHG emissions, (2) provide the basis for government assurances that companies would not be penalized for their early reductions under a future climate policy, and (3) potentially create a powerful incentive for voluntary reductions.

To achieve these objectives, a sound GHG reporting program must strike a balance between comprehensive tracking of the various greenhouse gases emitted by major sources and minimization of program costs borne by both reporting entities and the administering federal agencies. While the ultimate program should include major direct GHG sources, as well as significant indirect sources,<sup>2</sup> such as imports of electricity and product use emissions, a phased approach is likely to be most feasible. This brief describes a program that would ultimately include at least 75 percent of human-induced GHG emissions in the United States.



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## Why a Mandatory Program?

While GHG reporting could be either voluntary or mandatory, experience suggests that mandatory reporting will stimulate voluntary reductions across the economy — not just among the small group of corporate leaders who typically participate in voluntary programs.

Voluntary GHG reporting programs already in existence have helped facilitate and document significant emissions reductions by a number of entities. One important existing program is the Voluntary Reporting of Greenhouse Gases Program, managed by the Department of Energy under section 1605(b) of the Energy Policy Act of 1992. The 1605(b) program records the results of voluntary measures to reduce, avoid, or sequester carbon. During 2000, 222 U.S. companies and other organizations reported to the program that they had undertaken 1,882 projects to reduce or sequester greenhouse

gases. (Of these, only 100 reported entity-wide emissions — as opposed to projects.<sup>3</sup>) These companies, however, are a small group compared to over 10,000 establishments nationwide that together generate about 80 percent of the CO<sub>2</sub> emissions from the manufacturing sector (See Figure 2).

The 1605(b) program has been criticized for lacking rigorous reporting standards and verification requirements, allowing the double-counting of reductions, and failing to account for overall GHG emissions increases by entities registering reductions at the project level.<sup>4</sup> Efforts to improve the 1605(b) program may remedy some of these weaknesses. However, even were such flaws remedied and baseline protection and other incentives provided, significant GHG reductions would not be assured because most emitters would still not participate. Experience suggests that only mandatory reporting can achieve the broad participation needed to stimulate voluntary reductions across the economy.

A case in point is the Toxics Release Inventory (TRI) program (see box), a mandatory reporting and disclosure program long considered effective in stimulating voluntary reductions of chemical releases across a large segment of industry. Under the TRI, mandatory disclosure has prompted voluntary action by firms not typically predisposed to voluntary action. The top managers and non-environmental staff of large firms have often first learned of their releases through TRI disclosure — leading them to reduce the economic waste represented by the chemical releases. Vendors of pollution prevention technologies have used the TRI to find customers.

State and local agencies have used the TRI to identify firms in need of technical assistance. And, finally, facilities not otherwise moved have been motivated to reduce emissions by the publicity associated with disclosure. All these mechanisms would likely operate under a mandatory GHG reporting program as well. In other words, *mandatory* reporting and disclosure is key to stimulating *voluntary* GHG emission reductions.

In addition, the information yielded by a mandatory reporting program — broader and more detailed than what is available now — would provide policy-makers a stronger foundation on which to develop a comprehensive climate change strategy.

## Covered Gases

Global warming is caused by a number of gases, each with its own potential to trap heat in the earth's atmosphere. A GHG reporting program should include the following six greenhouse gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>),<sup>5</sup> and possibly other greenhouse gases, should they prove significant. Generally accepted reporting standards, guidance, and calculation tools have already been developed for most GHGs and GHG sources and are in use.<sup>6</sup>

For matters such as carbon sequestration and the release of certain gases, however, calculation tools still need to be developed, and reporting would have to be phased in by the implementing agency. Reporting ultimately on all six gases,

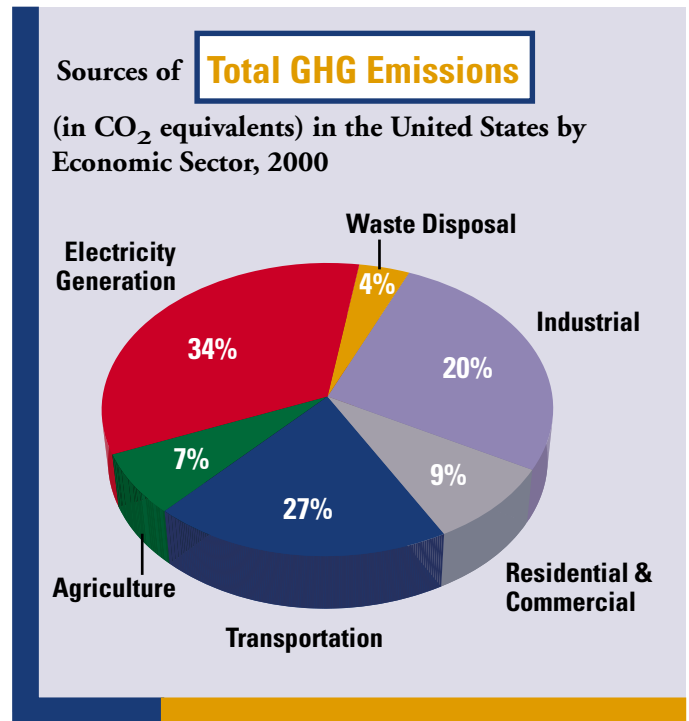
rather than just CO<sub>2</sub>, would be important in developing a comprehensive climate change strategy. In addition, some entities emit significant amounts of non-CO<sub>2</sub> greenhouse gases and may find opportunities to reduce these emissions as well as CO<sub>2</sub>. A reporting program should track all six gases to credit such entities under any future program to limit GHG emissions.

## Reporting of Facility Emissions

Greenhouse gases are released in association with many human activities, by entities large and small. Currently, powerplants report their CO<sub>2</sub> emissions under the Clean Air Act.<sup>7</sup> A comprehensive program, however, should include a broader array of reporting entities.

One way to strike the balance between establishing a reasonably inclusive program and minimizing the reporting burden, especially on small businesses, would be to require reporting by entities that own at least one facility whose emissions exceed a given threshold. For example, the implementing agency could be directed to set the threshold at the level necessary to bring into the reporting system at least 75 percent of human-induced emissions of GHGs in the United States. (See Figure 1.) Any entity that owns at least one U.S. facility that emits more than the threshold would then report its GHG emissions entity-wide.

Figure 1



Source: U.S. EPA. *Inventory of Greenhouse Gas Emissions and Sinks: 1990-2000* (February 2002, draft for public comment).

Note: Residential & Commercial emissions are primarily due to fossil fuel combustion for heating. Excludes emissions from U.S. territories.

An alternative approach would be to require any entity with entity-wide emissions above the threshold to report. This approach, however, would require commercial enterprises consisting of several small facilities to conduct analyses of firm-wide emissions just to determine whether they should report. In contrast, requiring reporting by any entity with at least one *facility* over the threshold — rather than by any *entity* over the threshold — would keep entities made up of several small facilities out of the system. Reporting and disclosure should also apply to government facilities, many of which are large GHG emitters.

## Information Required on Facility Emissions

Measurement and reporting of emissions should be done according to generally accepted reporting standards and established by rule of the agency (or agencies) charged with administering such a program. One existing tool that could serve as the basis for reporting emissions from a particular facility is the Greenhouse Gas Protocol Initiative Corporate Accounting and Reporting Standard, which was developed through an international multi-stakeholder process.<sup>8</sup> Ultimately, a balance must be struck between developing reasonably complete information and minimizing the burden on the reporting entities. One way to strike this balance would be to require covered entities to report the GHG emissions released: (1) directly from all but their smallest U.S. facilities, (2) from their vehicle fleets, and (3) as indirect emissions<sup>9</sup> estimated to be associated with imported electricity, heat, or steam (e.g., by using standard factors under the reporting protocol). Each of these three would be reported as a separate item of information to prevent double counting when the data are aggregated — for example, of the indirect emissions from electricity use by a manufacturer and the direct emissions of its power company. These factors represent the main emissions sources under the control of most reporting entities.

## Reporting of Product Use Emissions

The use of certain GHG-intensive consumer products, such as vehicles and major appliances, generates a large portion of U.S. GHG emissions. Furthermore, many companies are developing technologies or products — including cars,



*Many companies are developing technologies or products – including cars, appliances, and computers – that through increased energy efficiency or other means could substantially reduce greenhouse gas (GHG) emissions. A GHG reporting program that does not include such products would be incomplete.*

appliances, and computers — that through increased energy efficiency or other means could substantially reduce GHG emissions. Their success in doing so is vital for any domestic or global effort to reduce GHG emissions. A GHG reporting program that does not include such products would be incomplete.

For these reasons, companies that manufacture certain GHG-intensive consumer products — in particular, appliances for which the Department of Energy has set energy efficiency standards and motor vehicles — should report an estimate of the annual GHG emissions associated with use of their products in the United States. The implementing agency should publish a method of estimating annual emissions for each of these products.

Figure 2

Estimated number of **Manufacturing Establishments** and associated CO<sub>2</sub> emissions reported under 3 rep

NAICS Code <sup>1</sup>	Product manufactured	Total establishments	Total CO <sub>2</sub> emissions (MT CO <sub>2</sub> /yr) <sup>2</sup>	1,000 MTCO <sub>2</sub> threshold				10,000 MTCO <sub>2</sub> threshold			
				establishments		CO <sub>2</sub> emissions		establishments		CO <sub>2</sub> emissions	
				number	% size <sup>3</sup>	MT CO <sub>2</sub> /yr	%	number	% size <sup>3</sup>	MT CO <sub>2</sub> /yr	%
311	Food	26,302	46,275,576	26,302	100 a	46,275,576	100	1,341	5 d	18,278,852	40
312	Beverage and tobacco	2,727	5,808,031	624	23 b	4,936,826	85	175	6 d	3,751,988	65
313	Textile mills	4,694	8,899,573	1,516	32 b	7,876,122	89	441	9 d	5,499,936	62
314	Textile product mills	7,899	1,818,716	190	2 d	1,202,171	66	71	1 e	811,147	45
315	Apparel	16,989	1,616,043	170	1 e	588,240	36	0	0 g	35,553	2
316	Leather and allied products	1,861	212,151	74	4 d	74,041	35	0	0 —	0	0
321	Wood products	17,367	5,503,267	1,372	8 c	3,026,797	55	0	0 —	0	0
322	Paper	5,868	72,517,459	5,868	100 a	72,517,459	100	458	8 d	56,636,136	78
323	Printing and related support	42,863	2,416,057	429	1 d	683,744	28	0	0 f	166,708	7
324	Petroleum and coal	2,146	217,627,119	2,146	100 a	217,627,119	100	2,146	100 a	217,627,119	100
325	Chemicals	13,474	170,334,195	13,474	100 a	170,334,195	100	3,166	24 c	146,146,739	86
326	Plastics and rubber	16,821	7,708,450	2,725	16 c	5,149,245	67	50	0 f	1,009,807	13
327	Nonmetallic mineral	16,310	60,819,811	16,310	100 a	60,819,811	100	1,011	6 c	43,425,345	71
331	Primary metals	5,059	141,210,985	5,059	100 a	141,210,985	100	1,376	27 c	131,608,638	93
332	Fabricated metal	62,384	14,251,116	3,618	6 c	6,341,747	45	62	0 f	555,794	4
333	Machinery	30,599	6,427,809	1,071	4 d	3,316,749	52	122	0 f	1,369,123	21
334	Computer and electronics	17,435	3,546,367	645	4 e	2,156,191	61	0	0 —	0	0
335	Electrical equipment and appliances	6,930	3,034,482	1,386	20 d	2,506,482	83	14	0 g	136,552	5
336	Transportation equipment	12,887	16,226,585	1,343	10 d	11,962,239	74	293	2 f	7,462,607	46
337	Furniture and related products	20,738	1,846,879	440	2 d	840,145	45	4	0 g	49,496	3
339	Miscellaneous	31,476	2,408,900	1,420	5 c	794,937	33	44	0 f	116,591	5
<b>Manufacturing total</b>		<b>362,829</b>	<b>790,509,570</b>	<b>86,182</b>	<b>24</b>	<b>760,240,820</b>	<b>96</b>	<b>10,775</b>	<b>3</b>	<b>634,688,130</b>	<b>80</b>
Percent of total U.S. CO <sub>2</sub> emissions			14				14				12
Percent of total U.S. GHG emissions			12				11				9

In addition, manufacturers of other products should be allowed to report voluntarily on product emissions and emissions reductions achieved through changes in product design. Future calculation tools for these and other “life-cycle” emissions could provide a basis for more widespread reporting of these emissions, and for baseline protection in the future. (See below for more on baseline protection.)

### Verification and Enforcement

Any mandatory program is only as effective as efforts to verify its results and enforce compliance. Toward this end, GHG emissions reports should be submitted annually on designated reporting forms by the covered entities. The forms should be self-reported and signed by an authorized officer of the firm to certify that emissions reported are accurate and complete.

## Reporting thresholds

100,000 MTCO <sub>2</sub> threshold					
establishments			CO <sub>2</sub> emissions		
number	%	size <sup>3</sup>	MT CO <sub>2</sub> /yr	%	
0	0	—	0	0	
5	0	g	482,067	8	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
194	3	e	44,815,790	62	
0	0	—	0	0	
223	10	c	187,594,576	86	
283	2	e	68,133,678	40	
0	0	—	0	0	
16	0	f	1,885,414	3	
218	4	e	103,366,441	73	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
0	0	—	0	0	
939	<1		406,277,965	51	
				7	
				6	

<sup>1</sup> North American Industry Classification Code (formerly Standard Industrial Classification).

<sup>2</sup> MTCO<sub>2</sub> = metric tons carbon dioxide

<sup>3</sup> Smallest employment size class of establishments that would be required to report; a,b,c,d,e,f,g are < 50, 50-99, 100-249, 250-499, 500-999, 1,000-2,499, and >2,500 respectively.

Note: This analysis includes only direct (on-site) CO<sub>2</sub> emissions from fossil fuel combustion; it does not include emissions from purchased electricity, non-fossil-fuel CO<sub>2</sub> emissions from cement production, nor emissions from renewable sources such as waste wood and pulping liquor. Totals may not equal category sum due to independent rounding.

Data Sources: 1998 Energy Consumption by Manufacturers, U.S. Department of Energy, Energy Information Administration; 1997 Economic Census-Manufacturing, U.S. Department of Commerce, Economics and Statistics Administration; Inventory of U.S. Emissions of Greenhouse Gas Emissions and Sinks: 1990-1999, U.S. Environmental Protection Agency; Emissions of Greenhouse Gases in the United States 1998, Appendix B, U.S. Department of Energy, Energy Information Administration. Compiled by Naomi Pena, Pew Center on Global Climate Change, and Tristram West, Oak Ridge National Laboratory.

As with TRI reporting, entities should face civil penalties if they either fail to report or intentionally misrepresent their emissions. Several current environmental reporting programs allow, for example, fines of up to \$25,000 per day of violation for failure to report or false reporting.

The agency administering the program could develop additional verification requirements — including requiring other

data to supplement or corroborate the initial filing, and allowing for site inspections. Companies could choose to engage third-party verifiers to review their data, but verification by such entities would not be required for reporting their direct and indirect emissions. Third-party verifiers should receive government certification to ensure the integrity of their results. The implementing agency should establish minimum criteria to ensure that the certifications are of the highest possible quality and the methodologies are consistent.

## Public Disclosure

A key objective of a GHG reporting program would be to give the public direct access to information on GHG releases in a timely fashion. Through the Toxics Release Inventory (TRI) — an outstanding example of publicly available information — public disclosure in an electronic database has encouraged thousands of companies to assess potential mitigation opportunities and reduce emissions voluntarily. (See box, page 11.) The same could be true with a GHG disclosure program. To meet this objective, data on individual facilities and companies should be made available to the public over the Internet — except for information determined to be a trade secret<sup>10</sup> or information vital to national security. Gross emissions from an entity's U.S. sources, as well as net emissions (after considering sequestration and other project-based reductions and trading), should be reported to encourage comprehensive mitigation strategies. Companies should also be allowed to provide production-based<sup>11</sup> emissions information on a voluntary basis, for example, to show relative emissions reductions even as production increases.

## Projects and Offsets

Because GHG emissions have the same warming effect regardless of where on the globe they are emitted, it is useful to encourage the most cost-effective GHG mitigation opportunities even if they are not in the United States or at a facility owned by a reporting entity. Many companies have already invested in projects to reduce GHG emissions, for example, by investing in renewable energy projects. Others are investing in projects to remove and store, or “sequester,” carbon through, for example, reforestation and conservation. This work has been done by U.S. firms both domestically and abroad and provides an important means of keeping GHGs out of the atmosphere.

Allowing companies to register the progress of these programs would likely stimulate investments in more such projects. To this end, entities participating in a GHG reporting program should have the option of reporting reductions and offsets achieved through projects both inside and outside the United States, for example, through carbon sequestration and increased energy efficiency. Such offsets should: (1) be certified as real, quantifiable, and not resulting in increased emissions elsewhere; (2) be verified by a third party qualified to provide such certification; and (3) pertain only to projects not included in the entities’ required GHG reports.

Entities should also be able to report voluntarily transfers of ownership of a given GHG reduction or offset.

## Baseline Protection and Credit Trading

It is not known when a program to limit emissions of GHGs will be established in the United States or what the design of such a program will ultimately be. Despite these uncertainties, it is important to move forward with GHG reductions, given the long atmospheric lifetimes of greenhouse gases. To stimulate voluntary reductions of GHG emissions today, a GHG reporting program should provide “baseline protection” for companies that have already taken action or are planning to take action to reduce their emissions. These entities should be assured that — in the event of future controls on GHG emissions — they would receive credit for reductions achieved voluntarily. The extent and form of such credit would, of course, depend on the design of the ultimate GHG control program.<sup>12</sup>

Baseline protection from the first year of reporting and onward should apply to all participating entities that are in compliance with program requirements, with adjustments made to account for acquisitions, mergers, and other changes in the entity’s operation. An entity’s “baseline” would be emissions reported during its first year of reporting under this program, unless it chooses to select an earlier base year for which there is credible and verifiable information on GHG emissions. Those selecting an earlier base year would follow the procedures discussed below.

## Reporting of Activity Prior to Enactment of this Reporting Program

Many companies have taken responsible actions to curb their GHG emissions and undertake GHG reduction projects over the last decade, due to concern about climate change



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impacts and in response to the United Nations Framework Convention on Climate Change and various U.S. voluntary programs. These companies should receive credit for their early action. A GHG reporting program should make it possible for such entities to report (and receive baseline protection for) entity-wide emissions and offsets implemented after 1990 and before enactment of the program, so long as the information is certified by the reporting entity and is reported under the established reporting standards as explained above. Companies should select a base year for which their emissions are well documented and verifiable.

Procedures should also be developed by the administering agency for considering petitions from companies that can show that, even though they cannot meet the exact requirements of the newly developed protocol, they can provide substantially the same information in order to support use of an earlier base year.

## Minimized Reporting Burden

A federal GHG reporting program should be designed to minimize the cost, inconvenience, and general burden associated with reporting. As mentioned earlier, reporting by any entity with at least one facility over the threshold, rather than by any entity over the threshold, would keep entities made up of small facilities out of the system (unless they chose to participate voluntarily). In addition, the implementing agency should work with stakeholders to establish protocols and emission factors, and the program should be integrated with GHG reporting requirements at other levels of government, as well as with other existing environmental reporting requirements. Electronic reporting should be allowed and encouraged, in a format that allows entities to report directly from their internal electronic databases to the reporting system. The administering agency should specify emissions factors for industries (and common unit-process technologies) that could be used by reporting entities. Technical assistance in reporting should be available to any reporting entity.

## Implementing Agency

Any of several agencies could be assigned the task of establishing a GHG reporting program. The U.S. Environmental Protection Agency (EPA) has experience in establishing mandatory reporting and disclosure programs, and the infrastructure needed for managing one and making its contents readily available. Currently, for example, the EPA manages the Clean Air Act program under which utilities report their annual CO<sub>2</sub> emissions, as well as the Toxics Release Inventory. The Energy

Information Agency at the Department of Energy (DOE) is also a considerable source of data on GHG emissions and administers the DOE's 1605(b) reporting program. Similarly, the Economics and Statistics Administration of the Department of Commerce routinely manages a vast amount of data on business activity. Whatever agency is assigned should be able to implement a mandatory reporting program by rule and enforce its requirements, manage and disclose a large amount of publicly available data, protect trade secret information and national security data, and provide technical assistance to reporting entities.

## Optional Reporting

The GHG reporting program described here would require reporting by major GHG emitters, but not by hundreds of thousands of smaller businesses and other entities. Some of these entities, however, might want to report voluntarily. For example, the owner of a chain of dry cleaning facilities, none of which exceeds the emissions threshold, may wish to demonstrate corporate leadership by voluntarily registering GHG reductions achieved by investing in more efficient cleaning equipment. Similarly, a university that does not emit enough direct emissions to trigger reporting may invest in energy efficiency buildings and convert its fleet of vehicles to cleaner fuels. This type of leadership is very positive and

should be encouraged. Under a GHG reporting program, any entity, not otherwise covered, should be allowed to report voluntarily and have its information fully incorporated into the system, as long as its information is certified by an officer of that entity as meeting the established protocol.

## Conclusion

A mandatory greenhouse gas reporting and disclosure program is an essential step in any effort to address climate change. The program outlined in this paper would ultimately track at least 75 percent of the human-induced GHG emissions in the United States, providing policy-makers and the public a sound basis for developing a comprehensive GHG reduction strategy, and creating incentives for entities to reduce their GHG emissions. These elements are important for the establishment of a sound, credible, and cost-effective reporting program. Such a program should be put in place without delay. 🌍

## The Toxics Release Inventory: A Model Reporting Program

The Toxics Release Inventory (TRI) is maintained by the U.S. Environmental Protection Agency (EPA) in accordance with the Superfund Amendments and Reauthorization Act of 1986, section 313 (SARA 313). Under SARA 313, about 23,000 facilities annually report the amount of certain toxic chemicals they release to the environment.

From its inception, the inventory was designed to maximize public availability, making the TRI perhaps the best-known federal environmental information program. SARA 313 also gave the EPA authority to expand the group of covered chemicals and facilities and lower the threshold for reporting, which the EPA has done. The EPA has also taken several steps to ease the cost associated with reporting, including producing an interactive software program to guide facilities through reporting.

The results of the program have been striking: manufacturers' release of the 340 chemicals initially listed under SARA 313 dropped by 45.5 percent from 1988 through 1999. While some of this reduction was due to the regulation of the chemicals, especially under the Clean Air Act, voluntary action is believed to have motivated a large portion of these reductions as well. Some of the voluntarism was spurred by a desire to reduce the economic waste represented by the loss of the chemicals and some by an interest in demonstrating environmental leadership to the public.

The TRI has been used as the basis for voluntary goal programs at both the federal and state levels as well. In 1990, for example, the EPA launched the "33/50 Program," a voluntary program that challenged industry to reduce releases of 17 high-priority TRI chemicals by 33 percent by 1992 and 50 percent by 1995. Individual companies entered into non-binding commitments to achieve specific reductions on a company or facility-wide basis. The 33/50 Program met its 50-percent reduction goal in 1994, one year ahead of schedule.

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<sup>1</sup>U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2000 Draft For Public Comment, February 2002.

<sup>2</sup>Direct emissions are emissions from sources that are owned or controlled by the reporting entity, e.g., emissions from factory stacks, manufacturing processes and vents, and from company-owned/controlled vehicles. Indirect emissions are emissions that are a consequence of the reporting entity’s activities, but occur from sources owned or controlled by another entity, e.g., emissions from the production of purchased electricity, contract manufacturing, employee travel on scheduled flights, and emissions occurring during the product use phase. World Business Council for Sustainable Development — World Resources Institute (WBCSD/WRI), The Greenhouse Gas Protocol Initiative: Corporate Accounting and Reporting Standard, October 2001, [www.ghgprotocol.org](http://www.ghgprotocol.org).

<sup>3</sup>U.S. Department of Energy, Energy Information Administration, Voluntary Reporting of Greenhouse Gases 2000, February 2000.

<sup>4</sup>D. Lashof and D. Hawkins, Less than Meets the Eye: An Analysis of Greenhouse Gas Emission “Reductions” Reported by Electric Utilities, Natural Resources Defense Council, March 2000.

<sup>5</sup>These are the greenhouse gases addressed by the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

<sup>6</sup>WBCSD/WRI, The Greenhouse Gas Protocol Initiative. Also Ontario Ministry of the Environment, Step By Step Guideline for Emission Calculation, Record Keeping and Reporting for Airborne Contaminant Discharge, April 2001.

<sup>7</sup>Clean Air Act Amendments of 1990 (Public Law 101-549), Section 821.

<sup>8</sup>WBCSD/WRI, The Greenhouse Gas Protocol Initiative. The first “module” under this protocol consists of standards, guidelines, and calculation tools for companies and other organizations wanting to account and report their direct and indirect emissions of the six GHGs covered by the Kyoto Protocol. A future module under development will provide accounting and reporting standards for project-based GHG reduction activities.

<sup>9</sup>See endnote 2 above.

<sup>10</sup>Trade secrets are treated differently by different federal statutes. Under the Clean Air Act, for example, emissions information cannot be withheld on the basis of trade secrecy. Under the Superfund Amendments and Reauthorization Act of 1986 (SARA), which created the Toxics Release Inventory (TRI), however, a reporting entity may seek trade secret protection of information which: (1) has not been disclosed by the entity to any other person, unless under a confidentiality arrangement; (2) has not been disclosed under another law; (3) if disclosed, would cause substantial harm to the competitive position of the reporting entity; and (4) is not readily discoverable through reverse engineering. Upon showing that all four of these tests can be met, the specific chemical identity can be withheld from disclosure, and replaced by the generic class or category of the reported chemical. The rest of the reported information must be disclosed. (See SARA Section 322.) A similar approach under a GHG reporting program (once the trade secret determination had been made) would provide for disclosure of all the information except the identity of the specific greenhouse gas, which could be represented instead by its carbon dioxide equivalence.

<sup>11</sup>A production-based emissions report, for example, could state the amount of GHGs emitted per unit of product manufactured (for reporting entities that are manufacturers) or per unit of electricity generated (for reporting entities that sell electricity). Such a rate-based approach could provide important information on efficiency improvements that are not transparent from reporting absolute measures (e.g., metric tons).

<sup>12</sup>The Pew Center’s review of existing statutory authorities indicates that the Executive Branch currently lacks authority to assure that current efforts to reduce GHG emissions receive credit under a future law. If a baseline protection program is to have binding effect, it must be authorized by law. To an extent, neither the Executive Branch nor the current Congress can bind a future Congress. However, the Supreme Court in *U.S. v. Winstar Corp.*, (116 S.Ct. 2432 (1996)), recognized several limitations on Congress’s ability to enact later inconsistent law. “First, if the agreement makes ‘unmistakably clear’ that future regulatory authority is being surrendered, then the courts will recognize the effect of the agreement. Second, even if such a surrender is not unmistakably clear, the federal government may be deemed to have agreed to shift the risk of regulatory change from the regulated entity to the government and thereby provide the regulated entity a damages remedy against the government. Thus, a properly drafted agreement within the scope of the agency’s authority could provide participants substantial comfort that the government commitment would be honored or, if not, the government would be liable for damages.” R. Nordhaus and S. Fotis, *Early Action & Global Climate Change: An Analysis of Early Action Crediting Proposals*, Pew Center on Global Climate Change, October 1998.

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